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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/121,152
Filing Date: July 22, 1998
Appellant(s): OW ET AL.

Patrea L. Pabst
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 11, 2007 appealing from the Office action mailed May 9, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

Appeal No. 92-3394, before the Board of Patent Appeals and Interferences, decision rendered on March 10, 1994.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

It is noted, however, that claim 47 depends on a cancelled claim (claim 41). Its subject matter is identical to claims 45 and 46, therefore claim 47 will be treated accordingly.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

1. Claims 21-25, 27, 30, 31, 33, 34, 36, 37, 40, 42-47, 49, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299.

2. Claims 26, 32, 35 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299 as applied to claims 21 and 31 above, and further in view of Fuentes et al (US 4,923,565).

3. Claims 28 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299 as applied to claims 21 and 31 above, and further in view of Hageman et al (US 4,548,674).

The changes above reflect the correction of certain errors propagated by a previous examiner during prosecution. Claims cancelled by Appellant have been removed from the rejections. The claims to which prior art references Fuentes and Hageman have been applied are now properly identified. This does not constitute new grounds of rejection, but merely places the rejections in proper form for appeal.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

The rejection of claims 27, 28, 37, and 48 under 35 U.S.C. 112, first paragraph, has been withdrawn.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

JP 59-9299	Kao Soap Co. Ltd.	01-1984
US 4,923,565	Fuentes et al.	05-1990
US 4,548,674	Hageman et al.	10-1985

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

1. Claims 21-25, 27, 30, 31, 33, 34, 36, 37, 40, 42-47, 49, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299.

With respect to independent claims 21 and 31, JP '299 discloses a method of de-inking waste or recycled printed paper, comprising pulping the waste paper with an enzyme in an aqueous medium, wherein ink is dislodged from the waste printed paper by action of the enzyme. The dislodged ink particles are subsequently removed from the waste paper pulp by methods such as flotation or rinsing. JP '299 discloses on page 2, last paragraph, that common enzymes of the type cellulase occurring in plants, animals, bacterial, and fungi can be used without special restriction. An **especially preferred** enzyme is alkaline cellulase which has an **optimum** pH of 8.0-11.5 (emphasis added), which range overlaps the endpoint of the claimed range of pH 3-8.

Thus, being only a preferred embodiment, JP '299 does not restrict the pH to this range nor restrict the enzyme to an alkaline cellulase. In any event, see page 3, first line, which states that alkaline cellulase retains its activity within the acid and neutral pH range (i.e., pH=7 or less, clearly less than pH=8). Therefore, JP '299 suggests that at acid or neutral pH there is a reasonable expectation of success for using alkaline cellulase. For these reasons, at least part of the claimed pH range of 3-8, if not all, is deemed to be within the scope of JP '299.

JP '299 further discloses on page 4, second paragraph, that the enzyme can be added to the paper disintegration step, i.e., the pulping step. JP '299 does not disclose expressly that the pulping occurs at a pH between 3 and 8, however, it would have been obvious to one skilled in the art to pulp the waste paper at the same pH as desired for enzyme activity.

JP '299 further discloses an amount of enzyme to be used is above 0.002% by weight. Example 1 discloses a dosage of 0.3%, which falls within the claimed ranges.

JP '299 further discloses a temperature of 45°C in Example 1.

JP '299 further discloses in Example 1 (page 4) pulping and de-inking at a pulp concentration of 6%. This is considered to be a high consistency relative to the consistency of pulp used for making paper (1% in the same example).

Other enzyme dosages, temperatures, and pulping consistencies are disclosed in subsequent examples, all of which fall within the claimed ranges.

All other claimed features are merely obvious characterizations of a de-inking process.

2. Claims 26, 32, 35, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299 as applied to claims 21 and 31 above, and further in view of Fuentes et al (US 4,923,565). Regarding these claims, JP '299 does not disclose the particular species of cellulases. Fuentes discloses pulping fibers with cellulase enzyme added at a pH between 3 and 7 and in an amount of enzyme of 0.01 – 2% of the weight of the dry pulp (col. 3, lines 15-24). Fuentes discloses that preferred enzymes within this pH range are acid cellulases (col. 3, lines 36-43), which may include cellulases derived from the Tirchoderma viridae (col. 4, lines 47-52) or Aspergillus niger (col. 6, lines 40-43) microorganisms. At the time of the invention, it would have been obvious to one skilled in the art to use known acid cellulases as disclosed by Fuentes in the process of JP '299 at acid or neutral pH where such cellulases have the desired enzymatic activity, particularly when the pH is below the preferred activity range for alkaline cellulases.

3. Claims 28 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 59-9299 as applied to claims 21 and 31 above, and further in view of Hageman et al (US 4,548,674). With respect to claims 28 and 38, JP '299 does not disclose expressly that the wastepaper pulping consistency is about 12% or greater. Hageman discloses pulping wastepaper for de-inking at consistencies between 1-15% (col. 3, lines 19-30), and refers to this range as being a level of high consistency. The pulping consistency in JP '299 is within this range, therefore it can be considered a high pulping consistency. The claimed consistency is also within this range. Thus, it would have been obvious to one skilled in the art to choose a pulping consistency in JP '299 that yielded the best results. One would arrive at the claimed consistency via routine experimentation depending on the processing conditions and pulping devices used.

(10) Response to Argument

The rejection set forth above has been modified from its previous version in order to correct certain clerical errors and to clearly point out those features of the applied references the examiner regards as being relevant to the appealed claims.

Appellant's arguments and the supporting declarations have all been considered.

Appellant's primary argument is that JP '299 constitutes a "teaching away" from the claimed invention, because JP' 299 teaches that the deinking method therein should be operated at a high alkaline pH, not at a pH between 3 and 8. The examiner does not dispute that the Examples in JP '299 are performed in the presence of 1% sodium hydroxide. Nor does the examiner dispute the statements made in the declarations pertaining to the high pH resulting from those additions of 1% sodium hydroxide. Because alkaline cellulase with an optimum pH range of 8.0-11.5 is used in the Examples of JP '299, it is reasonable to expect one to pulp the paper in the presence of the enzyme at an alkaline pH which is suitable for the enzyme's activity. However, as discussed in the rejections above, the use of alkaline cellulase is merely an "especially preferred" embodiment. The JP '299 reference is relied upon for all that it would have reasonably suggested to one having ordinary skill the art. The disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure including embodiments at acid or neutral pH. Thus, if one chose to use an acid or neutral cellulase rather than an alkaline cellulase, which is within the broader teachings of JP '299, then it is reasonable to expect one to pulp the paper in the presence of the enzyme at the same acid or neutral pH as the enzyme's activity.

Argument's pertaining to the combinations of references are not persuasive. It is recognized that Fuentes is not concerned with deinking. However, Fuentes is cited merely to illustrate what is known in the art regarding acid cellulases. One skilled in the art would look to prior art other than JP '299 to choose an enzyme suitable for deinking at acid or neutral pH. It is also recognized that Hageman does not teach deinking using an enzyme. However, Hageman is merely cited to show an exemplary range of pulp consistencies used in deinking, and to show that the claimed consistencies fall well within this range.

Regarding the measurement of enzyme activity at pH=6.0 (page 5 of JP '299), and regarding the question of "if the enzymatic activity was measured at pH of 6.0, why were the examples operated at pH of 10-11?", without any information other that what is disclosed, it can only be speculated that measuring an enzyme's activity at pH 6.0 and 0.6 unit/mg solid is a standard test that does not take into account the enzyme type or operating pH. The operating pH differs because it corresponds to the choice of using an alkaline cellulase.

(11) Related Proceeding(s) Appendix

Copies of the court or Board decision identified in the Related Appeals and Interferences section of this examiner's answer have been provided by Appellant in the Appeal Brief.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Eric Hug

Conferees:

Steven Griffin

Jennifer ~~Kolb~~-Michener

JENNIFER MICHENER
QUALITY ASSURANCE SPECIALIST